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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,814	11/10/2003	Shinichi Nakamura	9319H-000586	5228

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EXAMINER	
NGUYEN, LAMSON D	
ART UNIT	**PAPER NUMBER**
2861	

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/705,814	NAKAMURA, SHINICHI	
	Examiner	Art Unit	
	Kristy A. Haupt	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 11/10/03, 6/23/05
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Priority

The Examiner acknowledges the Applicant's request for priority under 35 USC § 119 for Application Number 10/705,814 filed 10 November 2003.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Endo US 6,565,185 B1.

With respect to claim 1, Endo teaches a method of determining abnormality of nozzles in an imaging apparatus having a plurality of ejection nozzles, comprising:

- A first step of performing a function liquid droplet ejection confirming operation to determine whether or not function liquid droplets are normally ejected from the respective ejection nozzles (Figure 9, Step S7) by using liquid droplet detection means (Figure 9, Step S6 where the Test is done by the Missing Dot Test which uses a laser light and receiver to determine if a nozzle is clogged (Column 9, Lines 43-58)) before performing the imaging operation (Figure 9, Step S2 teaches performing the test when there is no print directive)

- A second step of performing the function liquid droplet ejection confirming operation once again when the ejection of the function liquid droplets from any of said ejection nozzles is determined to be abnormal in the first step (Figure 34 shows the first test at step S402 and the second test at step S442 when there are still non-operating nozzles present after the first test, step S404)

- A third step of judging said ejection nozzle to be abnormal when the ejection of the function liquid droplets from an identical ejection nozzle is determined to be abnormal also in the second step (Figure 34 teaches if the nozzle is found to be non-operating after both tests then the printing operation does not use that nozzle, the abnormal nozzle, during printing)

With respect to claim 2, Endo teaches:

- A fourth step of performing a maintenance work when any of the ejection nozzles is judged to be abnormal, thereby restoring said ejection nozzles to a state in which the function liquid droplets are ejected normally (Figure 17, step S100 teaches performing a cleaning sequence when a non-operating nozzles is detected in step S7)
- A fifth step of performing the function liquid droplet ejection confirming operation once again after the fourth step (Figure 17 teaches the process is repeated until there is a print directive in step S2)

- A sixth step of transferring to the imaging work when the function liquid droplets are determined to be ejected normally from all of said ejection nozzles in the fifth step (Figure 17 teaches printing in step S3 when a print directive is issued in step S2)

With respect to claim 5, Endo teaches:

- An imaging apparatus in which the method of determining abnormality of nozzles according to claim 1 is executed (Column 1, Lines 28-29)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo US 6,565,185 B1 in view of Choi US 2002/0171699 A1.

Endo additionally teaches:

With respect to claim 4:

- A seventh step of performing the function liquid droplet ejection confirming operation once again after a second maintenance work to remove the function liquid droplets from said ejection nozzles when the function liquid droplet ejection is determined to be abnormal also in the fifth step (Figure

17 teaches the process is repeated until there is a print directive in step S2)

Endo fails to explicitly teach:

With respect to claim 3:

- Wherein the maintenance operation is a preliminary ejection operation of ejecting the function liquid droplets from the ejection nozzles

With respect to claim 4:

- An eighth step of issuing an instruction of replacing the head unit when the ejection of the function liquid droplets is determined to be abnormal even after the seventh step

However, Choi teaches:

With respect to claim 3:

- Wherein the maintenance operation is a preliminary ejection operation of ejecting the function liquid droplets from the ejection nozzles (Paragraph 0007)

With respect to claim 4:

- An eighth step of issuing an instruction of replacing the head unit when the ejection of the function liquid droplets is determined to be abnormal even

after the seventh step (Figure 2 teaches the printhead must be replaced in step S210 after a number of purges is greater than a predetermined number, as shown in step S180, otherwise the cycle repeats to clear the abnormal nozzles)

Therefore it would have been obvious to one of ordinary skill in the art to modify the invention of Endo to use preliminary ejection means, as taught by Choi, for the purpose of cleaning the abnormal nozzles (Endo explicitly teaches in Column 12, Lines 22-25, that various types of cleaning are able to be used in the invention).

Therefore it would have been obvious to one of ordinary skill in the art to modify the invention of Endo to replace the printhead after the predetermined number of steps, as taught by Choi, as the attempts to fix the abnormal nozzles are unsuccessful and meaningless testing and purging operations are prevented (Page 3, Paragraph 0033)

5. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo US 6,565,185 B1 in view Turner et al. US 6,480,182 B2.

Endo fails to explicitly teach:

With respect to claim 6:

- An electro optic device having formed a film formation part by ejecting the function liquid droplets onto the workpiece from the liquid droplet ejection heads with the imaging apparatus according to claim 5

With respect to claim 7:

- A method of manufacturing an electro optic device, comprising the step of forming a film formation part by ejecting the function liquid droplets onto the workpiece from the liquid droplet ejection heads with the imaging apparatus according to claim 5

However, Turner et al. teaches:

With respect to claim 6:

- An electro optic device (Column 1, Line 12) having formed a film formation part by ejecting the function liquid droplets onto the workpiece from the liquid droplet ejection heads with the imaging apparatus according to claim 5 (Column 2, Lines 30-33)

With respect to claim 7:

- A method of manufacturing an electro optic device (Column 3, Lines 37-45)), comprising the step of forming a film formation part by ejecting the function liquid droplets onto the workpiece from the liquid droplet ejection

heads with the imaging apparatus according to claim 5 (Column 2, Lines 30-33)

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Endo to test for abnormal nozzles in an apparatus and a method used to manufacture an electro optic device, as taught by Turner et al. to reduce the likelihood of nozzle clogging (Endo, Column 1, Lines 46-47).

6. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo US 6,565,185 B1 in view Turner et al. US 6,480,182 B2 as applied to claims 6 and 7 above, and further in view of Kawase et al. US 6,783,208 B2.

Endo in view of Turner et al. fails to explicitly teach:

With respect to claim 8:

- An electronic equipment having mounted thereon the electro optic device according to claim 6

With respect to claim 9:

- An electronic equipment having mounted thereon the electro optic device manufactured by the method of manufacturing an electro optic device according to claim 7

However, Kawase et al. teaches:

With respect to claim 8:

- An electronic equipment having mounted thereon the electro optic device according to claim 6 (Column 5, Lines 56-61)

With respect to claim 9:

- An electronic equipment having mounted thereon the electro optic device (Column 5, Lines 56-61) manufactured by the method of manufacturing an electro optic device according to claim 7 (Column 6, Lines 30-37)

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Endo in view of Turner et al. to mount the electro optic device onto an electronic equipment, as taught by Kawase et al., as electro optic devices such as Liquid Crystal devices and EL devices are widely used as display sections of electronic apparatuses (Column 1, Lines 28-31).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kristy A. Haupt whose telephone number is (571) 272-8545. The examiner can normally be reached on M-F 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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LAMSON NGUYEN
PRIMARY EXAMINER
07/08/05